

VICARIA: AN E-LEARNING SYSTEM FOR THE RISK ASSESSMENT

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Abstract

An e-learning system in the risk assessment engineering domain has been developed by a consortium led by Ligeron® in the context of the Vicaria project (Leonardo da Vinci – N° PP 118018). The e-learning platform: www.vicaria.fr has been implemented and hosted by OVH in compliance with SCORM (Shareable Content Object Reference Model) standard. The Vicaria modules contents have been defined according to an investigation performed in different European countries, particularly in France, to gather the user requirements. The Vicaria contents dedicated mainly to the environmental risks and ICPE are now available for use in French. The issue of the performed work and the e-learning system specifics are partly summarized in this paper.

Keywords

Software, Risk Engineering, Environment Risks, Methods and Tools, Databases and Multimedia; eLearning, Distance learning

1. INTRODUCTION

The VICARIA project (E.C. funded in the context of the Leonardo da Vinci programme – PP 118018) is aimed at risk engineering training via a virtual classroom and open training system [1].

The training is aimed at familiarizing operators, engineers and technicians in various industrial sectors such as process and chemical, mechanical and electrical industries for a large number of risky tasks and activities, in particular those having an impact on environment.

The target user groups for such a system are those engineers and technicians who are directly concerned with industrial and technological risks of such activities [1].

The main Vicaria project result is a commercialized, marketable distance training and e-learning system for a wide range of number of organizations, including large companies and SMEs, universities and other research institutions closely concerned with risk engineering domain.

The project e-learning system can be accessed by [2]: <http://www.vicaria.fr>.

Information is also available on the Leonardo web site [3].: www.leonardo.fr

In this paper, the authors attempt to summarize firstly the issue of the investigation, which has been carried out mainly in France in order to highlight the industrial needs and requirements for industrial risk assessment [4-5]. The basic architecture of the Vicaria e-learning system remains compliant with SCORM standard [6-7]. This scheme LMS platform has been followed for the development of the Vicaria system [6-7-8-9-10].

The Vicaria platform has been hosted by the French Company OVH in the north of France.

2. BACKGROUND AND OBJECTIVES

Training is a vital activity for most of companies, both large ones and SMEs. According to explicit requirements of ISO 9001 (v 2000) standard, each company should provide training for its staff especially for sensitive and critical tasks requiring competence. This is particularly the case in risk management and control. Experience shows that the majority of the accidents and failures

are due to unawareness with respect to industrial risks including human errors. Training entails effort and cost. In France, most of the large companies dedicate a part of their turn over (3% in general) to this kind of activity [2]. There is a crucial need to:

- optimise this kind of activity;
- guarantee the cost effectiveness and avoid any waste of resources;
- ensure the efficiency of training by providing a good and appropriate support and platform;
- ensure a high quality training with high level experts acting as tutors.

Providing distance learning and a virtual classroom in the risk management and control field is welcomed by both large companies and SMEs, especially because the degree of awareness in this sensitive domain is still low [4]. Moreover, the new European SEVESO directives [11] will become applicable soon. This Vicaria system may be considered as the optimum solution for the following reasons:

- 1) It does not significantly affect the availability of the trainees(they are free to choose the timing);
- 2) It is cost-effective and allows savings with regards to travel and subsistence expenses.
- 3) It enables the training managers of the companies to assist and attend the courses, in this way allowing them to judge the relevancy and quality of training and provided courses.
- 4) It can provide the best trainer-tutor in a specific field (from specialists within or outside the company).
- 5) It is the only way to provide vocational training among SMEs due to their lack of financial resources.

The VICARIA system developed in the context of the E.C. Leonardo da Vinci II call (Pilot project) is finally aimed at providing a "blended learning" based on a combination of different media (virtual classroom, Videoconferencing, WBT/CBT, web seminars, webTV, etc.). The blended training comprises both synchronous (e.g. Traditional presence training :ILT, WebTV,...) and asynchronous (e.g. WBT-CDRom etc.) modules. Moreover, design of the open distance learning system includes accessibility, interoperability, durability and re-usability aspects and uses open standards with respect to platform and contents [8-9]. The project has a strong multi-language and multi-cultural aspect as four European languages will ultimately be used: French, English, Portuguese and Greek.

3. FEEDBACK PROVIDERS [4-5]

The first set of results is aimed at defining the profile of the feedback providers. 75% of the responders were private companies and institutions, which were closely concerned by training the staff and scaling up personnel knowledge.

The contacted companies and institutions were mostly situated in Greece, France, Portugal and United Kingdom. A number of countries such as Scandinavian countries and East or Central European countries were not really represented. This is to say that the European geographical spread was not really balanced, since a particular focus was put on the project partners' native countries in particular Greece – France and Portugal [4-5-6-7].

Figure N° 1 : Country repartition of feedback providers

It can be noticed that most of the contacted organizations were mainly SMEs (enterprises with less than 250 employees). The proportion of SMEs among the contacted companies reaches nearly 73%.

This implies that the conducted investigation is mostly oriented to SMEs needs and expectations. It confirms that an e-learning system is quite adapted to SMEs' needs, which cannot afford a high cost of training including travel, subsistence and unavailability of the personnel during the classical training period.

The main profiles of the contacted companies are shown on the following figure 2 [4-5-6].

This information is originating from a direct question (Q3) addressed to feedback providers or interviewees.

Figure N° 2: Type of organization of responders [4]

Finally, the figure N° 3 [4-6] shows the responders' different sectors of activities. The public sector and automotive or transport sectors are the most representing ones. The education and training sector is also well represented.

Figure N° 3: Economical sector of the feedback providers [4-6]

4. STATE OF THE ART [4-5-6]

The second part of the investigation was oriented to the state of the art with respect to e-learning and risk assessment training.

Figure 4 shows the status of the feedback providers with respect to ISO certification. This figure demonstrates that the state of the art in terms of ISO certification remains low and a lot of effort is still needed for the certification purpose.

41% of the contacted companies and institutions state that they have never used an e-learning system for staff training and learning. 18% do not know what an e-learning system is. The web-based manner of training still remains at a low level of use.

Figure 4: ISO certification status of feedback providers[4]

It seems that the classical method of training based on the presence of a tutor (face to face) constitutes the most current and commonly practiced way of learning and training. The contact with a tutor considered as an expert in the training domain is the general practice.

68% of the contacted persons confirmed that they had never followed a training in the risk engineering domain [4].

5. USER REQUIREMENTS AND NEEDS [2-4-5]

Getting the user requirements and needs is basically a difficult task. Indeed, most of the contacted organizations express reservations with regard to their needs especially when a sensitive subject like industrial risks is tackled.

This is understandable as the Company's needs are generally closely related to the enterprise's strategy and not be revealed to external bodies.

Safety and security are obviously sensitive subjects. This is particularly true when tackling the ISO 14001 certification or compliance with safety directives ICPE.

The level of interest in the risk engineering domain seems high.

Nowadays, the cost reduction of industrial activities is imposed within many companies while constraints related to environment protection increase. The risk reduction and control methods are to be necessarily practiced in order to limit the accidents and give a better image. The type of training modes needed is illustrated in the following figure (N° 5) [4-6] which shows the level of need for web based tools.

Figure 5: Training mode needed in risk management and control [4-6]

Both synchronous and asynchronous training are considered as needed [4-6].

As environment protection is a major concern, an emphasis is put on ICPE and industrial risks rather than project and management risks.

6. VICARIA DESCRIPTION

6.1. Home Page

The Vicaria system platform home page is shown below (Figure N° 6) [2-8].

The user or trainee is asked to go to the Vicaria platform as hosted by OVH (hosting Company if France).

The possibility of contact (contact@vicaria.fr) is also given on the first page as the trainee may have a set of preliminary questions to be clarified.

Four (4) flags appear at the bottom of the page which enable the user to select the language of the e-learning and courses. It should be mentioned that the Vicaria system is only operational in French. A number of modules are translated into English (by the Bournemouth University) – Portuguese (by Autor New Media or Edulearn) and Greek (by EEDE). They will be implemented at a later stage. Other languages may also be used in the future.

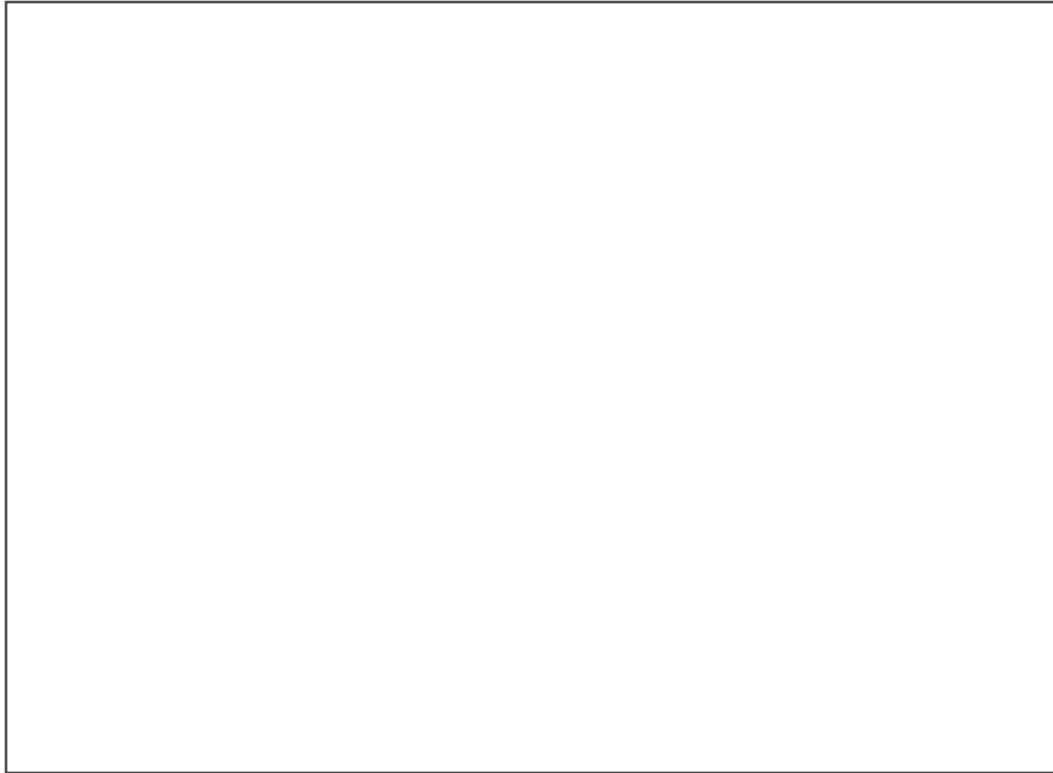


Figure 6: Vicaria system home page [3]

6.2. PLATFORM

The platform normally requires a login and a password [2].

After introducing the required identification, the following screen appears. Documents are split into three parts : training courses (cours) – links (liens) and tests.

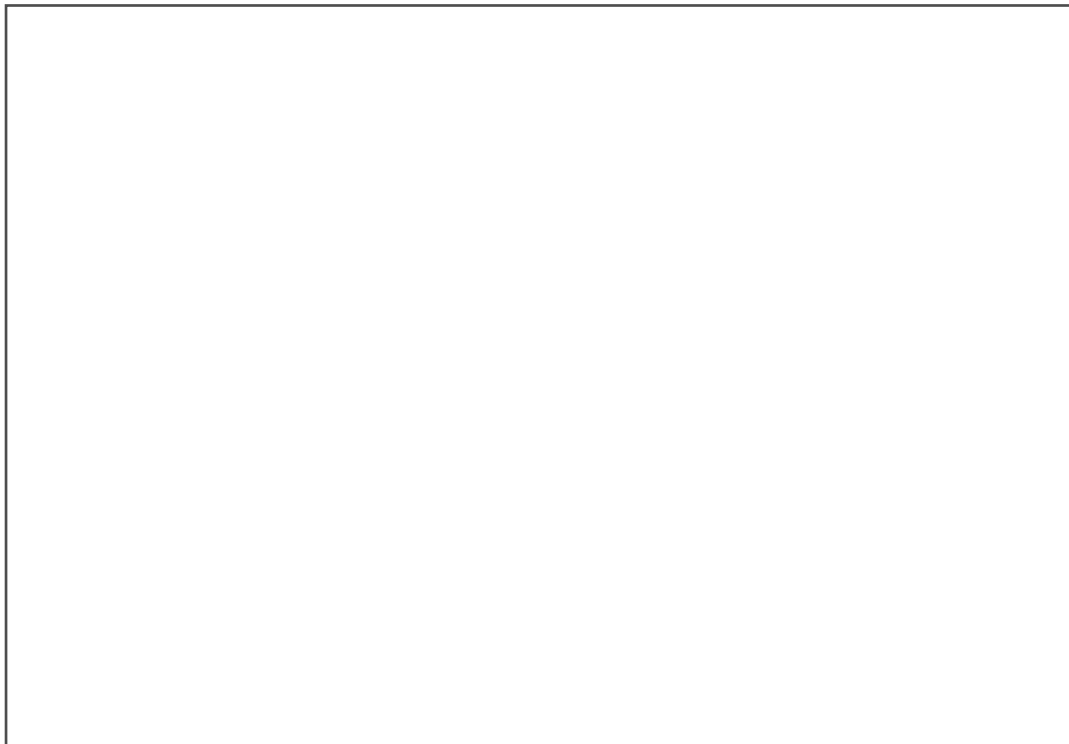


Figure 7: Training modules in risk assessment [3]

A large number of training modules aimed at ICPE (Installation Classée pour la Protection d'Environnement) and APR (Analyse Préliminaire de Risques) are available. The user or trainee should select first the category of modules and then a single module [2].

By clicking on each ICPE module a video appears with the relevant document subject of explanation.

when the video is running, based on expertise and speech of Mr. Jean Pierre Beau, the relevant text also appears especially for codes or schemes (Figure N° 8). At the left side, all modules relevant to the selected category are listed.

The Vicaria system has also an auto-evaluation system which enables the trainee to assess his knowledge [2-9-10].

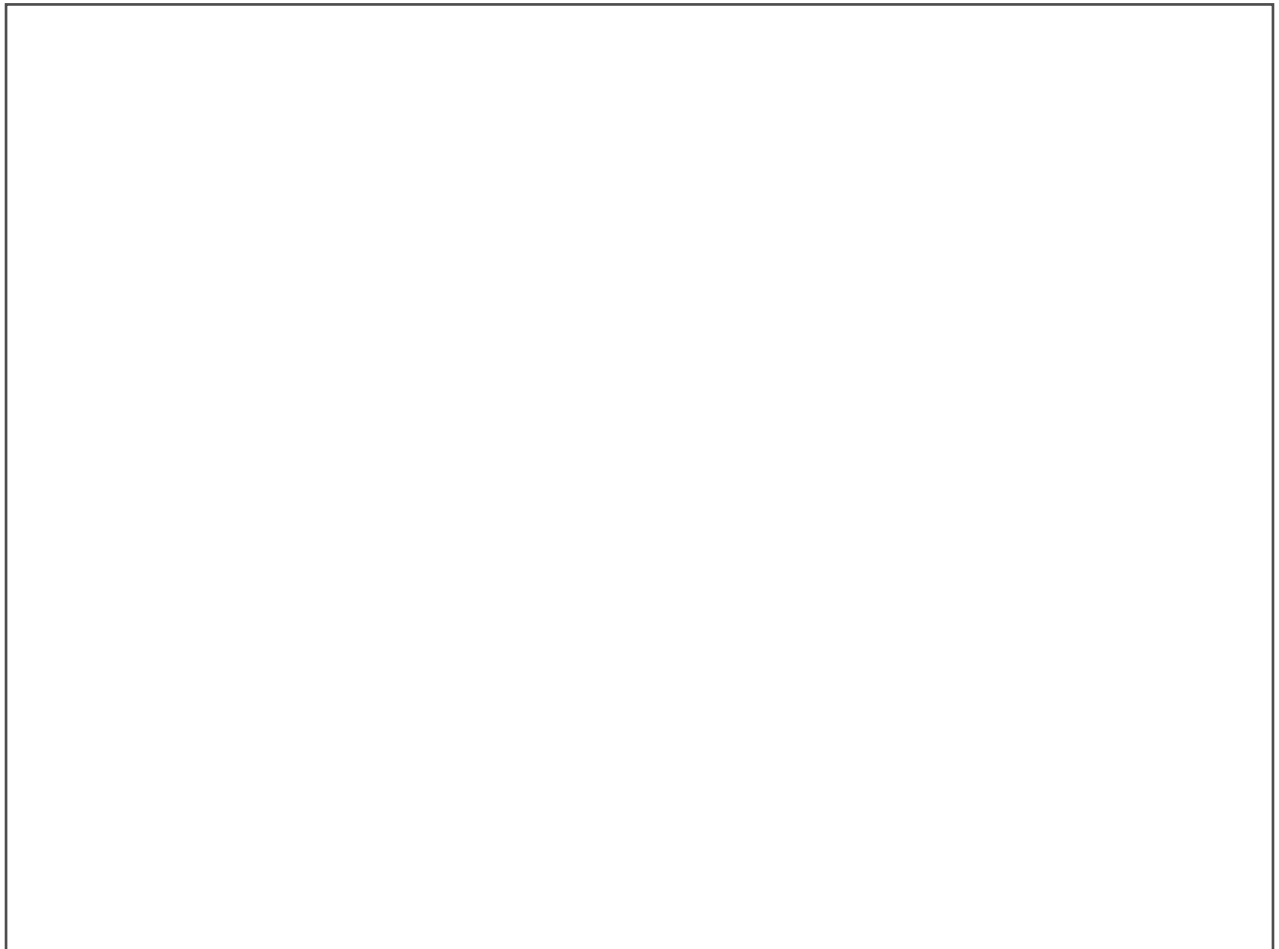


Figure 8: Vicaria system training module [3]

7. Conclusions

The Vicaria project was aimed at providing a “blended learning” system based on a combination

of different media (virtual classroom, video-conferencing, CD-Rom, WBT/CBT, etc...) in order to optimize the open distance learning in the risk engineering domain [1]. A useful survey has been performed in the context of the Vicaria project (Leonardo programme – Project N° PP 118018) [4].

The first set of questions was oriented to define the profile of the feedback providers (country – size of the organization – activity, etc...)[4-5].

The second chapter was aimed at acquiring a better visibility on the state of the art in the risk engineering training domain based on different methods and types of learning and training including e-learning [4-5]. At the moment, e-learning systems are not really used much in industry due to lack of confidence, but can be adapted to meet SMEs needs, so demonstrating that there is a market segment to be addressed. It is also noticeable that the state of the ISO certification in particular for ISO 14000 series does not seem satisfactory. The applicability of the emerging OHSAS (ISO 18000) follows also a slow process [4].

Finally, the last part of the investigation was devoted to the user needs and requirements gathering. There is a crucial need for a better standardization taking into account the specific needs of industries in particular SMEs [4-5].

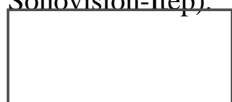
Although the e-learning systems and virtual universities and classrooms are not nowadays currently and commonly used [4], the future trend clearly shows that such technologies are rapidly emerging and respond to the needs of companies both large ones and in particular SMEs [2].

The Vicaria e-learning system is operational in the French language. Other languages will be used in near future. A large number of modules are presently available for ICPE (Installation Classée pour la Protection d'Environnement) and APR (Analyse Préliminaire de Risques). Globally, the Vicaria system is oriented to environment risks.

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NOTE : Ligeron® Sonovision-Itep is the owner of the mark **VICARIA** (herin below). The intellectual property of the risk assessment courses included in the Vicaria system belongs to this Company. The courses cannot be copied or translated without explicit authorization of the Company (Ligeron® Sonovision-Itep).



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